Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	
Amendment of Parts 15, 73 and 74 of the Commission's Rules to Provide for the Preservation of One Vacant Channel in the UHF Television Band For Use By White Space Devices and Wireless Microphones	MB Docket No. 15-146
Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions	GN Docket No. 12-268

COMMENTS OF MICROSOFT CORPORATION

Paula Boyd
Director, Government Relations and Regulatory Affairs

Michael Daum
Technology Policy Strategist

MICROSOFT CORPORATION
901 K Street NW, 11th Floor
Washington, DC 20001

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I. INTRODUCTION AND SUMMARY.

Microsoft supports the Commission's efforts to ensure that vacant television channels will remain available for unlicensed use in every market after the close of the Incentive Auction.[1] By enabling the public to retain access to at least one vacant channel in every market, along with a second vacant channel in markets where the 600 MHz duplex gap is impaired, the proposals in the Vacant Channel NPRM and Bidding Procedures PN can contribute significantly to the future success of unlicensed white space technologies.

The Commission has ample legal authority to adopt its proposed rules. Title III of the Communications Act provides broad authority for the Commission to promote efficient spectrum use through regulatory classifications and licensing requirements. Furthermore, the Spectrum Act places few relevant limits on this authority. Far from curtailing the Commission's ability to promote unlicensed operations, the Spectrum Act explicitly contemplates that the Commission should continue to pursue its efforts related to unlicensed white space devices.

The FCC should therefore take the following steps to ensure that the public retains access to sufficient spectrum for unlicensed operations. First, the Commission should implement its proposals to require low-power broadcasters (including low-power television, television translator, as well as broadcast auxiliary service applicants) and Class A stations to demonstrate that the public will retain access to vacant channels before allowing them to make changes to

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[1] *See generally Amendment of Parts 15, 73 and 74 of the Commission's Rules to Provide for the Preservation of One Vacant Channel in the UHF Television Band For Use By White Space Devices and Wireless Microphones*, Notice of Proposed Rulemaking, FCC 15-68, 30 FCC Rcd. 6711 (2015) ("NPRM"); *Procedures for Competitive Bidding in Auction 1000, Including Initial Clearing Target Determination, Qualifying to Bid, and Bidding in Auctions 1001 (Reverse) and 1002 (Forward)*, WT Docket No. 12-269, MB Docket No. 15-146, Public Notice, FCC 15-78, ¶ 32 (Rel. Aug. 11, 2015) ("Bidding Procedures PN").

their facilities. Second, the Commission should require full-power broadcasters to make the showing at the end of this period, allowing exceptions only in special circumstances. Third, the Commission should determine channel vacancy in a manner that takes into account the updated Part 15 rules for white space devices. In some markets there are significant restrictions on white space device operations, including permanent co-channel and adjacent channel exclusion zones enforced by white spaces databases and nominally temporary Part 74 channel reservations that can in practice completely preclude unlicensed use of a channel for long periods of time, just as a television station would. These enhancements to the Commission's proposals would impose only minimal burdens on broadcast operations, while improving certainty and increasing the value of unlicensed white spaces for consumers.

II. PRESERVING VACANT TV-BAND CHANNEL AVAILABILITY IS CRITICAL TO THE SUCCESS OF UNLICENSED OPERATIONS BELOW 1 GHZ.

Fixed and personal/portable white space devices promise to expand upon the unprecedented success and value of unlicensed technologies such as Wi-Fi to frequencies below 1 GHz ("low-band spectrum"). Innovators can leverage the reduced signal attenuation found at these lower frequencies. Although, as the FCC has correctly determined, access to low-band spectrum is critical to providing wireless services,[2] the Incentive Auction will reduce the number of channels available for white space devices in every market for accessing this low-band

[2] *See* NPRM ¶¶ 1, 8, 10. *See also Policies Regarding Mobile Spectrum Holdings*, Report and Order, FCC 14-63, 29 FCC Rcd. 6133, 6168 ¶ 69 (2014) ("We find that the promotion of competition, variety of licensees, rural coverage, and consumer choice in the mobile marketplace, as well as in the future, crucially depends upon multiple providers having access to the low-band spectrum they need to operate and vigorously compete.").

spectrum. Thus, the Commission must carefully consider whether the unlicensed spectrum it makes available for devices that operate under the white spaces rules will enable these technologies to reach their potential.

The success of unlicensed operations in these bands depends on the availability of sufficient spectrum to make investment by chipmakers, device manufacturers, and other innovators economically feasible. As the record indicates, achieving this goal will require that Commission rules foster predictability and certainty that unlicensed devices will have access to a minimum of three usable 6 MHz-wide channels nationwide, although the channels need not be the same in every market.[3]

The FCC's proposal to preserve at least one vacant channel per market is critical to achieving this goal. The Commission has cut back on the availability of other unlicensed channels in the Incentive Auction proceeding, leaving only channel 37, a 6 MHz channel in the

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[3] *See* NPRM ¶ 10 n. 26 (explaining that the Commission has taken actions in the Incentive Auction proceeding "to make available a significant amount of spectrum for white space device operations, including in the post-auction television bands, in order to help create certainty for the unlicensed industry and thereby promote greater innovation in new devices and services, including increased access to broadband services across the country"); Reply Comments of IEEE 802, ET Docket No. 12-268 (filed Mar. 12, 2013). *See also* Letter from Paul Margie, Counsel for Google Inc., to Marlene H. Dortch, Secretary, FCC, GN Docket No. 12-268 and ET Docket No. 14-165 (filed June 2, 2015); Reply Comments of Microsoft Corporation at 3, ET Docket No. 14-165 and GN Docket No. 12-268 (filed Feb. 25, 2015); Comments of Google Inc. at 51, ET Docket No. 14-165 and GN Docket No. 12-268 (filed Feb. 4, 2015); Comments of Microsoft Corporation at 2, ET Docket No. 14-165 and GN Docket No. 12-268 (filed Feb. 4, 2015); Letter from Paul Margie, Counsel for Broadcom Corporation, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 12-268 (filed Sept. 25, 2014); Letter from Paul Margie, Counsel for Google Inc. and Microsoft Corporation, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 12-268 (filed Sept. 19, 2014); Letter from S. Roberts Carter, Counsel for Broadcom Corporation, to Marlene H. Dortch, Secretary, FCC, at 1, GN Docket No. 12-268 (filed Apr. 23, 2014).

duplex gap, a 6 MHz channel in a lower guard band of at least 9 MHz in size, and any remaining broadcast white spaces as potential homes for unlicensed technologies. While all white space devices will be permitted to operate on available channels in the frequency range from 470 MHz (Channel 14) to no closer than 3 MHz from the lower edge of the LTE-downlink, subject to the interference protection requirements in Sub Part H, only fixed white space devices can operate on available channels in the frequency bands below 470 MHz. Thus, the TV white spaces that remain after the auction above 470 MHz are the only option to ensure the third channel needed to support unlicensed investment and innovation for personal/portable devices. And because the post-auction repack will eliminate a substantial number of white spaces in urban areas, the Commission's proposal to protect vacant channels in each market is the only way to achieve the Commission's goal of creating a successful unlicensed ecosystem in the 600 MHz band for both fixed and personal/portable white space devices.

Importantly, to minimize the number of impaired spectrum blocks that will be made available for the forward auction on a national basis, the Commission announced that the optimization procedure it will use to generate a new channel assignment plan for the repack after the Incentive Auction permits it to place television broadcasters in the duplex gap in certain circumstances, foreclosing this channel to white space devices in some markets.[4] And while channel 37 will provide a second unlicensed channel in some areas, exclusion zones surrounding radio telescopes and wireless medical telemetry sites, the latter of which will be especially prevalent in urban markets, will limit the locations where consumers can rely on channel 37 for

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[4] *See* Bidding Procedures PN ¶¶ 31-32.

their white space devices. Moreover, the Commission's plan to possibly reevaluate the rules for operation in channel 37 after the conclusion of a limited test period[5] has created significant uncertainty about whether this spectrum will ultimately be available.

With respect to duplex gap operations, it appears likely that the Commission's rules could impair the duplex gap in several major metropolitan areas, including Los Angeles.[6] Lack of sufficient unlicensed spectrum in these markets would have a disproportionate chilling effect on development and deployment of white space devices. Because many of these cities are home to large populations and are frequent travel destinations for consumers throughout the country, they will be critical to enabling widespread use of white space devices. If white space devices cannot operate in these cities, industry may not be able justify the significant investments needed to create a widespread market for them. Indeed, Microsoft is concerned that if there is too little spectrum in these important markets, or significant uncertainty about how much spectrum will be available, it could result in manufacturers' abandoning the personal/portable white space device market entirely, which would make achieving the FCC's goal of developing a 600 MHz unlicensed market impossible.

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5 *Amendment of Part 15 of the Commission's Rules for Unlicensed Operations in the Television Bands, Repurposed 600 MHz Band, 600 MHz Guard Bands and Duplex Gap, and Channel 37*, ET Docket No. 14-165, and GN Docket No. 12-268, Report and Order, FCC 15-99, ¶ 221 (2015) ("Part 15 Order").

6 *See, e.g.*, Letter from Gary M. Epstein, Chair, FCC Incentive Auction Task Force, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 12-268, WT Docket No. 12-269, AU Docket No. 14-252, Appendix (filed Jul. 10, 2015) (releasing additional data regarding clearing target simulations). The Incentive Auction Task Force data contained several simulation results showing broadcast stations assigned to channels that overlap with the duplex gap, including in markets such as Los Angeles, Detroit, Cleveland, and Milwaukee. *Id*.

The Commission can improve these market dynamics by adopting its proposal to ensure that a second vacant channel remains available for unlicensed use after the Incentive Auction and the post-auction transition period conclude.[7] Doing so will increase the chances that three usable 6 MHz channels will be available in key markets and, accordingly, improve the odds that unlicensed devices will flourish in these bands. Moreover, a commitment by the Commission to make this spectrum available for unlicensed use will reduce uncertainty in the market immediately, encouraging investment by chipmakers and device manufacturers at a time when predictability is extremely important.

III. THE COMMISSION SHOULD REQUIRE BROADCAST APPLICANTS TO DEMONSTRATE THAT THE PUBLIC WILL RETAIN ACCESS TO VACANT CHANNELS.

Microsoft agrees with the Commission that post-auction rules should protect vacant channels in every market through a vacant-channel demonstration. As discussed below, the FCC has clear authority to create such a rule, and should apply the rule differently with regard to full-power, Class A, and Low Power Television ("LPTV") licensees.

A. The Commission Has Ample Authority to Adopt its Proposals.

It is well established that the Commission has "broad authority to manage spectrum . . . in the public interest"[8] as well as a "comprehensive mandate to 'encourage the larger and more

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[7] *See* Bidding Procedures PN ¶ 32, n. 125.

[8] *Cellco P'ship v. FCC*, 700 F.3d 534, 541 (D.C. Cir. 2012) (citing *Reexamination of Roaming Obligations of Commercial Mobile Radio Service Providers and Other Providers of Mobile Data Services*, Second Report and Order, FCC 11-52, 26 FCC Rcd. 5411, 5440 ¶ 62 (2011)).

effective use of radio in the public interest.'"[9] Title III of the Communications Act explicitly authorizes the Commission to "[p]rescribe the nature of the service to be rendered by each class of licensed stations and each station within any class,"[10] modify any station license "if in the judgment of the Commission such action will promote the public interest, convenience, and necessity,"[11] and "[m]ake such rules and regulations and prescribe such restrictions and conditions, not inconsistent with law, as may be necessary to carry out the provisions of this chapter."[12] The Commission's proposal to condition future licenses and license modifications on the licensee's showing that the modification would preserve vacant television channels in order to advance wireless broadband is fully consistent with this broad statutory mandate.

Preserving vacant television spectrum is also consistent with the Spectrum Act. While the Spectrum Act imposes certain specific requirements regarding the design of the forward and reverse auctions, it leaves the repacking process almost entirely to the Commission's discretion. Once the Commission has completed the reverse auction, the Spectrum Act requires only that the Commission "evaluate the broadcast television spectrum,"[13] providing that the Commission "may . . . (i) make such reassignments of television channels as the Commission considers appropriate; and (ii) reallocate such portions of such spectrum as the Commission determines are

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9 *Id*. at 542 (quoting *NBC v. United States*, 319 U.S. 190, 219 (1943)). *See also* 47 U.S.C. § 303(g).

10 47 U.S.C. § 303(b).

11 *Id.* § 316(a)(1).

12 *Id.* § 303(r).

13 *Middle Class Tax Relief and Job Creation Act of 2012*, Pub. L. No. 112-96, § 6403(b)(1), 126 Stat. 156, 226 (2012) ("Spectrum Act").

available for reallocation."[14] The act articulates only a handful of factors that limit this broad discretion, none of which are implicated by the Commission's proposal to ensure that at least one white space is preserved in every market.[15] Congress otherwise delegated to the Commission the authority to conclude that a reassignment which would consume the last remaining white space would not be "appropriate"[16] and that, in reallocating portions of the spectrum, one or more white spaces in each market are not "available for reallocation"[17] if to do so is consistent with the public interest.[18]

The Spectrum Act, moreover, says nothing at all about what requirements the Commission may or may not impose on new broadcast licensees, or on licensees seeking to modify their service contours, after the repack is complete. And the Spectrum Act is explicit that "[n]othing in [the repack provisions of the Spectrum Act] shall be construed to . . . expand or contract the authority of the Commission, except as otherwise expressly provided."[19] The Commission's proposal regarding the vacant-channel showing, therefore, falls squarely within the broad authority granted by Title III and preserved by the Spectrum Act. Likewise, there is no provision of statute or the Commission's rules that prevents the Commission from making rules

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14 *Id.*

15 *See id.* § 6403(b)(2)-(5).

16 *See id.* § 6403(b)(1).

17 *See id.*

18 47 U.S.C. § 303.

19 Spectrum Act § 6403(i)(1).

under Part 73 to preserve space for unlicensed operations through the licensing, license modification, or other rules that govern broadcasters.[20]

Furthermore, the Spectrum Act explicitly recognizes the value of protecting access to the television band for white space technologies. And, as the Commission explained in its white spaces Second Report and Order, "allowing use of the TV white spaces by unlicensed devices will have significant benefits for both businesses and consumers and thereby promote more efficient and effective use of the TV spectrum"—goals which would be frustrated in the absence of the Commission's vacant-channel proposals.[21] The Spectrum Act specifically provides that "[n]othing in [the repack provisions of the Spectrum Act] shall be construed to . . . prevent the implementation of the Commission's 'White Spaces' Second Report and Order and Memorandum Opinion and Order . . . in the spectrum that remains allocated for broadcast television use."[22] Thus, the Spectrum Act does not prevent the FCC's protection of vacant television-band spectrum, and in fact recognizes the value of protecting access to the band by white space devices.[23]

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[20] *Cf.* 47 C.F.R. § 90.353(d) (conditioning the authorization of certain Part 90 multilateration systems on licensees' ability to demonstrate that the system will not cause harmful interference to unlicensed operations).

[21] *Unlicensed Operation in the TV Broadcast Bands; Additional Spectrum for Unlicensed Devices Below 900 MHz & in the 3 GHz Band*, Second Report and Order and Memorandum Opinion and Order, FCC 08-260, 23 FCC Rcd. 16,807, 16,808 ¶ 2 (2008).

[22] Spectrum Act § 6403(i)(2).

[23] *See* NPRM ¶ 18.

Finally, the Commission may preserve vacant channels through an order now even if it decided not to do so in a prior order. As a general matter, the law affords Commission decisions substantial deference, and this is particularly true when "the decision under review requires expert policy judgment of a technical, complex, and dynamic subject."[24] A Commission decision to preserve open frequencies in every market for unlicensed technologies as part of the post-auction repack is such an "expert policy judgment." The Commission is entitled to deference even when the decision under review represents a change in a previous position. There is no heightened review of changed Commission decisions.[25] Rather, it is well established that the Commission is allowed to alter course so long as it "display[s] awareness that it *is* changing position"[26] and, as with any agency action, provides a reasoned explanation for its decision, supported by evidence on the record.[27] "[I]t suffices that the new policy is permissible under the statute, that there are good reasons for it, and that the agency *believes* it to be better, which the conscious change of course adequately indicates."[28]

If the Commission decides to adopt its recommendation to preserve vacant broadcast spectrum for unlicensed use, its NPRM and the record in this proceeding will satisfy this highly deferential test. The record justifies both a predictive judgment by the Commission regarding the

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24 *Cablevision Sys. Corp. v. FCC*, 597 F.3d 1306, 1311 (D.C. Cir. 2010).

25 *FCC v. Fox Television Stations, Inc.*, 556 U.S. 502, 514-15 (2009).

26 *Id*. at 515.

27 *Id*. at 515-16.

28 *Id*. at 515.

substantial public benefits that unlicensed technologies in this band can provide[29] and a policy judgment that supporting unlicensed technology is worth the minimal cost to broadcasters of making the vacant-channel showing and forgoing a small amount of spectrum.[30] Moreover, the record clearly establishes the connection between the Commission's vacant-channel proposal and the potential for this new unlicensed ecosystem to flourish.[31] Finally, the Commission has acknowledged that its proposal represents a departure from prior decisions.[32]

B. The Commission Should Adopt its Proposal to Require Low-Power Broadcast Applicants to Make the Vacant-Channel Showing.

The Commission should adopt its proposal to require LPTV, TV translator, and Broadcast Auxiliary Service ("BAS") applicants to make the vacant-channel showing before permitting any change to their facilities, and should similarly apply this requirement to Digital Replacement Translator ("DRT") licensees. This obligation should apply to stations seeking to modify their existing facilities, new proposed stations seeking to commence operations, and stations seeking to relocate to a new channel after the repack. As the Commission has explained, permitting low-power stations to make such changes without first making the vacant-channel showing would undermine the Commission's goal of ensuring the continued availability of minimally sufficient spectrum for unlicensed use in every market.[33] Because low-power stations

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29 *See* NPRM ¶ 10.

30 *See id.* ¶¶ 10-11.

31 *See supra* n. 3.

32 *See* NPRM ¶ 19.

33 *See id.* ¶ 14.

operate in the geographic gaps between full-power stations, new stations or modifications to existing ones are especially likely to consume a community's last remaining vacant channel.[34]

In addition, although leading LPTV stations provide valuable programming, it is also true that, as Congress found, "many existing LPTV stations provide little or no original programming service."[35] The Commission's proposal therefore strikes the right balance between accommodating low-power broadcast operations and promoting the future development of unlicensed technologies in low-band spectrum, and is in keeping with operators' "explicit, full and clear prior notice that operation in the LPTV [and TV translator service] entails the risk of displacement."[36]

Although the Spectrum Act provides that the repack provisions do not "alter the spectrum usage rights of low-power television stations,"[37] these rights are not implicated by the Commission's proposal. The Commission's rules grant LPTV limited spectrum rights, namely permission to operate within stated technical limits on an available television channel, so long as a station does not cause harmful interference to full-power stations.[38] But the Commission's existing rules are entirely clear that an LPTV station, once established, does not enjoy any

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34 *Id.*

35 145 CONG. REC. S14725 (daily ed. Nov. 17, 1999) (statement of Sen. Maj. Leader Mr. Lott) ("Section-by-Section Analysis to S. 1938").

36 *Expanding the Econ. & Innovation Opportunities of Spectrum through Incentive Auctions*, Report and Order, FCC 14-50, 29 FCC Rcd. 6567, ¶ 241 (2014) (alteration in original).

37 Spectrum Act § 6403(b)(5).

38 *See* 47 C.F.R. §§ 74.702, 74.703.

protection from future changes by full-power stations, or from future regulatory changes by the Commission.[39]

Furthermore, as Congress observed, in exchange for the ease of obtaining an LPTV license, and their minimal other regulatory obligations, "not all LPTV stations can be guaranteed a certain future."[40] Indeed, the Commission's rules explicitly provide that it may make changes to the channels allotted for a given community or authorize new or modified full-power broadcast operations "without regard to existing or proposed low power TV or TV translator stations."[41] Thus, even before the passage of the Spectrum Act, the Commission could change the channels available for television broadcasters without regard to these changes' effects on low-power stations.[42] That is what the Commission proposes to do here.

C. The Commission Should Adopt its Proposal to Require Class A Television Stations to Make a Vacant-Channel Demonstration at the End of the 39-Month Transition Period.

Microsoft agrees with the Commission's proposal to require Class A stations seeking permission to make changes to their stations to, at a minimum, make the vacant-channel showing after the end of the 39-month transition period. After this period closes, it will be vitally

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39 *See id.* § 74.702(b).

40 Section-by-Section Analysis to S. 1938.

41 47 C.F.R. § 74.702(b).

42 *See id*. Although the Commission has allowed DRTs to have priority over LPTV when resolving mutually exclusive applications, this has no bearing on whether DRTs have any protection against a FCC decision to limit the channels available to them, or on whether the Commission can or should require such stations to make the vacant-channel showing. The Commission's sound policy reasons for requiring LPTV to make the vacant-channel showing, as well as its legal authority for doing so, apply equally to DRTs.

important to require Class A stations to make the vacant-channel showing before making voluntary changes to their facilities that could alter the existing band plan. Like LPTV stations, Class A stations would be disproportionately likely to occupy the final remaining vacant channel in a market due to the fact that, like LPTV, Class A facilities broadcast at low power and can operate in the areas between full-power licensees.[43] This heightens the possibility that a Class A station modification could fill one of the final remaining white spaces in a market, denying white space technologies access to needed spectrum in the broadcast band in that community. Thus, as the Commission correctly concluded, "exempting post-transition Class A television station modification applications from the vacant channel demonstration is not warranted to accomplish [the Commission's] post-auction transition goals and would unduly undermine [the] goal of preserving a vacant channel for white space devices and wireless microphones."[44]

Finally, consistent with Class A stations' superior rights—including repack protections—relative to LPTV, the Commission's rules should make clear that a Class A station may displace an LPTV station if necessary to ensure that vacant channels remain available in a market. Consistent with the Commission's analysis in the NPRM, no statutory or regulatory provision restricts the Commission's ability to allow a Class A station to displace an LPTV station under such circumstances.[45] Although the transmissions of a specific Class A station may not cause

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43 *See* NPRM ¶ 23.

44 *Id.*

45 *See id.* ¶ 25.

harmful interference to an LPTV broadcast,[46] the Commission's proposal does not implicate this rule because it does not cause radiofrequency "interference." Instead, the Commission's proposal merely exercises its "comprehensive mandate to 'encourage the larger and more effective use of radio in the public interest'"[47] and its clear authority to authorize new broadcast stations, or permit alterations to existing stations, "without regard to existing or proposed low power TV or TV translator stations."[48]

D. The Commission Should Require Full-Power Television Stations to Make a Vacant-Channel Demonstration During and After the 39-Month Transition Period for New Allotments, and After the Transition Period for Facility Modifications.

The Commission should not exempt full-power broadcasters seeking new allotments in a market from the vacant-channel showing during or after the transition period. These new allotments would not serve to further the purposes of the Spectrum Act and could frustrate the Commission's goal of ensuring that vacant channels remain available for unlicensed use. Although an existing broadcast licensee could occupy remaining channels between the time that a broadcaster seeking a new allotment makes a vacant-channel showing and the end of the transition period, requiring this showing would nonetheless reduce the chances that a new full-power broadcaster would consume the final vacant channel. Therefore, given the minimal burden of making the vacant-channel showing, and the significant value of providing certainty for unlicensed services, the Commission should require full-power broadcasters seeking a new

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46 *See* 47 U.S.C. § 336(f)(7)(B).

47 *Cellco P'ship*, 700 F.3d at 542 (quoting *NBC v. United States,* 319 U.S. 190, 219 (1943)).

48 47 C.F.R. § 74.702(b).

allotment in a market to make the vacant-channel showing during and after the 39-month transition period.

Microsoft also recommends that the Commission require full-power stations to make the vacant-channel showing after the 39-month transition period ends for facilities modifications as well as in allotment proceedings—including proceedings seeking changes in community of license, channel changes, and channel swaps. After the 39-month transition, broadcasters will have all the information necessary to make final decisions, and will have had more than three years to do so after the conclusion of the Incentive Auction. By allowing broadcasters to modify facilities, or ask for different channels than set forth by the Commission in the repack, during this entire period of time, the FCC will have more than fulfilled its responsibilities under the Spectrum Act.

After 39 months, the FCC should determine that the enormous benefit of providing finality and certainty for unlicensed technologies outweighs the small cost to broadcasters of making the vacant-channel showing if they wish to alter channels *more than three years after the repack.* In addition, while new allotments clearly pose the greatest risk of consuming the last remaining white space in a given area, the Commission has recognized that other modifications, such as changes in community of license, also present some risk.[49] Thus, to promote certainty for future white space operations, the Commission should require full-power broadcasters to make the vacant-channel showing when seeking new allotments or to change their communities of license.

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[49] *See* NPRM ¶ 30.

The Commission also seeks comment on potential exceptions to a vacant-channel requirement for full-power stations.[50] Microsoft acknowledges that full-power broadcasters should not be required to make this showing under certain special circumstances. However, the Commission should carefully limit these exceptions to advance its goal of supporting wireless broadband.

First, the Commission asks whether it should exempt from making the vacant-channel showing broadcasters that can demonstrate that a modification is necessary to preserve coverage and population served and necessitated by unforeseeable circumstances outside of the applicant's control.[51] This exception should apply only if elimination of the last vacant channel (or last two vacant channels in a market with a broadcaster in the duplex gap) cannot be avoided by allowing the full-power station to displace an LPTV, Broadcast Auxiliary Service ("BAS"), or TV translator station. As Microsoft has explained, the Commission has ample authority to displace these stations to preserve vacant channels, and such a rule would provide further finality and predictability for unlicensed investors that minimum sufficient spectrum will remain available. The FCC should also require the station to demonstrate that it was somehow impossible to make the request for the new channel during the 39-month transition period.

Finally, if the Commission decides to create a limited exception to the vacant-channel showing rule in cases where it is necessary to allot an educational channel in an area that lost its only noncommercial education channel during the Incentive Auction process, the Commission

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50 *See id.* ¶¶ 29-31.

51 *See id.* ¶ 29.

should use an appropriately sized area in making this finding—such as a Designated Market Area ("DMA"). The Commission should also, at most, permit this exception to the vacant-channel showing only where the DMA would be completely unserved by a noncommercial education broadcaster. Adopting an exception for smaller areas within DMAs that are still otherwise served by an educational station could create a broad exception that would swallow the general rule requiring a vacant-channel determination. As with the full-power modifications discussed above, moreover, the Commission should only allow the newly allotted educational station to occupy protected vacant channels if this outcome could not have been avoided by displacing a low-power station.

IV. THE COMMISSION'S METHODOLOGY FOR DETERMINING VACANT-CHANNEL AVAILABILITY SHOULD BE CONSISTENT WITH THE PART 15 RULES FOR WHITE SPACE DEVICES.

Microsoft generally agrees with the Commission's proposed criteria for determining whether a vacant channel is available, including rules that will be consistent with changes the Commission has adopted for operation of white space devices under Part 15.[52] Indeed, it would be of little value to require broadcast licensees to make the vacant-channel showing if the regulatory definition of "vacant" were not closely moored to the conditions under which white space devices will actually be able to operate.

First, Microsoft agrees with the Commission's proposal to consider a channel vacant in a given location if, at a minimum, the database would allow a 40 mW personal/portable device to

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[52] *See* NPRM ¶¶ 37-40.

operate on a television channel throughout the broadcast applicant's proposed protected area.[53] The rules should make clear that channel 37, the duplex gap, and any other guard-band spectrum should not be considered. In markets where the Commission decides to protect an additional vacant channel, this methodology can be adjusted to require a broadcaster to show that a 40 mW personal/portable device could operate on two different television channels. Although the Commission can better promote the development and deployment of a vibrant unlicensed white space ecosystem if there are similar assurances that spectrum would be available for higher power white space devices, Microsoft recognizes that the larger ranges of these devices could result in greater burdens on broadcast licensees in spectrum-constrained areas. Thus, given the particular value of personal/portable white space devices to consumers, ensuring the preservation of the last vacant channel for these uses strikes a reasonable balance between the certainties needed to spur investment in the unlicensed ecosystem and the spectrum requirements of broadcast operations.

In making this determination, the Commission should take into account the separation distances actually enforced against personal/portable white space devices and their permissible channels of operation. Thus, the required separation distances between television service contours and personal/portable white space devices should also apply for the purposes of the vacant-channel determination.[54]

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[53] *Id.* ¶ 37.

[54] *See id.* ¶ 38.

Likewise, the Commission should take into account its rules for all other separation distances and exclusion zones that apply to white space devices. These include the required co-channel and adjacent channel separation from PLMRS/CMRS systems operating in channels 14-20 and adjacent band protections required for licensees operating in the 450-470 MHz band.[55] Additionally, white space devices will not be able to operate on channels 36 and 38 within the polygon surrounding the WMTS facility plus a small additional buffer.[56] This brings into question whether channels 36 and 38, if available, can be considered usable vacant channels in many urban cores for personal/portable white space devices.

Microsoft believes the Commission can achieve these goals without adding regulatory complexity by creating vacant-channel rules that take advantage of white space databases. Specifically, it should simply require broadcasters to confirm that white space devices can operate on one—or, where necessary, two—or more vacant channels throughout their proposed protected contour, as reported by a white space database. Under this functional approach, there would be no need to specifically account for every potential limit on white space device operation in the Commission's rules. This would be the most technically straightforward approach as well since broadcasters themselves would likely use white space databases to make the vacant-channel determination. Adopting different separation distances for the vacant-channel determination than for the calculation of exclusion zones would not only generate anomalous and inaccurate results, it would burden all the parties involved: it would require database

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55 *See* Part 15 Order ¶ 59.

56 47 C.F.R. § 15.712(j)(2) (adopted Aug. 6, 2015).

administrators to conduct a separate set of calculations just for this determination, or needlessly require broadcasters to conduct these calculations themselves.

This realistic approach to the vacant-channel determination should also take into account BAS installations, wireless microphones, and other theoretically "temporary" users. While Microsoft agrees that the vacant-channel showing should not take into account truly temporary uses, the rules should acknowledge that some theoretically temporary BAS and wireless microphone installations are, in effect, permanent. In certain locations—near Broadway theaters, television studios, or heavily used sports stadiums, for example—BAS and wireless microphone registrations are frequent enough to routinely preclude unlicensed use of at least one channel. Failure to take these long-term users into account will reduce the accuracy of the vacant-channel showing, and limit its utility in promoting confidence in the ongoing availability of three channels for white space operations in major markets.

Fortunately, the Commission can easily solve this problem by adjusting the manner in which it distinguishes between short- and long-term restrictions on unlicensed operations. It should draw this distinction not on the basis of the type of service using a given channel, but based on the actual frequency and duration of its use. The Commission can operationalize this change by altering the vacant-channel showing to require broadcast licensees to demonstrate that the requisite number of vacant channels were available more often than not over the course of a given time window, such as the previous 30 days, instead of a single spectral snapshot. This need not substantially increase the burdens imposed by the vacant-channel showing, because this showing can also readily be facilitated by white space database operators.

V. CONCLUSION.

Microsoft appreciates the Commission's efforts to preserve one, or more in special circumstances, vacant channels for unlicensed operations in the broadcast band in every market. To reach this goal, the Commission should:

- Require low-power broadcasters to make the vacant-channel showing after the FCC's repack;
- Require Class A and full-power stations to make the vacant-channel showing for modifications and allotment proceedings, though this requirement should apply only after the conclusion of the 39-month transition period with the exception of proceedings to add a new station in a market; and
- Determine channel vacancy in a manner that is consistent with the Commission's Part 15 rules.

This approach is consistent with the Spectrum Act and will provide investors and innovators with the certainty that they need to achieve the Commission's goal of creating a successful unlicensed ecosystem in the band.

Respectfully submitted,

/s/ Paula Boyd

Paula Boyd
Director, Government Relations and Regulatory Affairs
Michael Daum
Technology Policy Strategist
MICROSOFT CORPORATION
901 K Street NW, 11th Floor
Washington, DC 20001
(202) 263-5900